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### ABSTRACT

5           An interferometry system for making interferometric measurements of an object,  
the system including: a beam generation module which during operation delivers an  
output beam that includes a first beam at a first frequency and a second beam at a second  
frequency that is different from the first frequency, the first and second beams within the  
output beam being coextensive, the beam generation module including a beam  
10   conditioner which during operation introduces a sequence of different shifts in a selected  
parameter of each of the first and second beams, the selected parameter selected from a  
group consisting of phase and frequency; a detector assembly having a detector element;  
and an interferometer constructed to receive the output beam at least a part of which  
represents a first measurement beam at the first frequency and a second measurement  
15   beam at the second frequency, the interferometer further constructed to image both the  
first and second measurement beams onto a selected spot on the object to produce  
therefrom corresponding first and second return measurement beams, and to then  
simultaneously image the first and second return measurement beams onto said detector  
element.